# Valley Water

## Validation of Cost Allocation for Proposed Groundwater Benefit Zones for the FY 2021 Rate-Setting Process

Final Report / February 28, 2020

RAFTELIS

# Introduction

Santa Clara Valley Water District (Valley Water) engaged Raftelis to perform a review of Valley Water's cost allocation for the rate-setting process for FY 2021 for Valley Water's Water Utility Enterprise Fund proposed groundwater benefit zones. Montgomery & Associates[1], a water resources consulting firm, analyzed the hydrologic characteristics of Valley Water's service territory to assess whether the existing groundwater benefit zones accurately reflect the geographic areas where groundwater users receive comparable benefits from Valley Water's existing and future groundwater management activities. The information provided by this analysis (referred to as the hydrological study) and stakeholder input obtained by Valley Water resulted in the Board authorizing Valley Water staff to prepare the survey description for the proposed groundwater benefit zones and for the calculation of the corresponding groundwater production charges for FY 2021. Specifically, Valley Water staff has recommended for the South Zone (Zone W-5) to be separated into three zones (W-5, W-7, and W-8), for a total of four distinct zones. In addition, the zones are impacted by the inclusion and exclusion of certain site-specific wells (operators or owners of groundwater wells) from these zones. This report discusses the review and validation of Valley Water's cost allocation for the FY 2021 rate-setting process for the proposed four zones.

# Valley Water Overview

In 1929 the State Legislature established the Santa Clara Valley Water Conservation District, now known as the Santa Clara Valley Water District (or Valley Water), to provide oversight of groundwater use since, prior to its establishment, groundwater had been pumped excessively, resulting in subsidence. Today, Valley Water functions as the primary wholesale water supplier and groundwater sustainability agency to 13 retailers and numerous well owners in the Santa Clara County (County), serving nearly two million residents in 15 cities across the County's approximately 1,300 square miles.

Valley Water's water sources include local water (network of reservoirs, creeks, and ponds), imported water accessible through the State Water Project (SWP) and Central Valley Project (CVP), and recycled water. The network used for local water is also used to transport imported water for groundwater replenishment or for conversion to treated water, through processing at one of three water treatment plants. The infrastructure used, along with the activities performed by Valley Water, allow for the availability of groundwater, treated water, recycled water, and surface water.

Valley Water was created by an act of the California Legislature referred to as the District Act. Section 26[2] of the District Act (Ground water charge; power to levy and collect) authorizes the establishment of groundwater production charges by zone and Section 3 of the District Act gives Valley Water the authority to establish and modify these zones. Each groundwater benefit zone has an associated fee based on the extent to which its groundwater resources benefit from Valley Water activities. Valley Water activities include "managed recharge" (methods include the infiltration of imported water or local runoff through creeks or

[1] Montgomery & Associates Preliminary Groundwater Benefit Zone Study dated August 2019

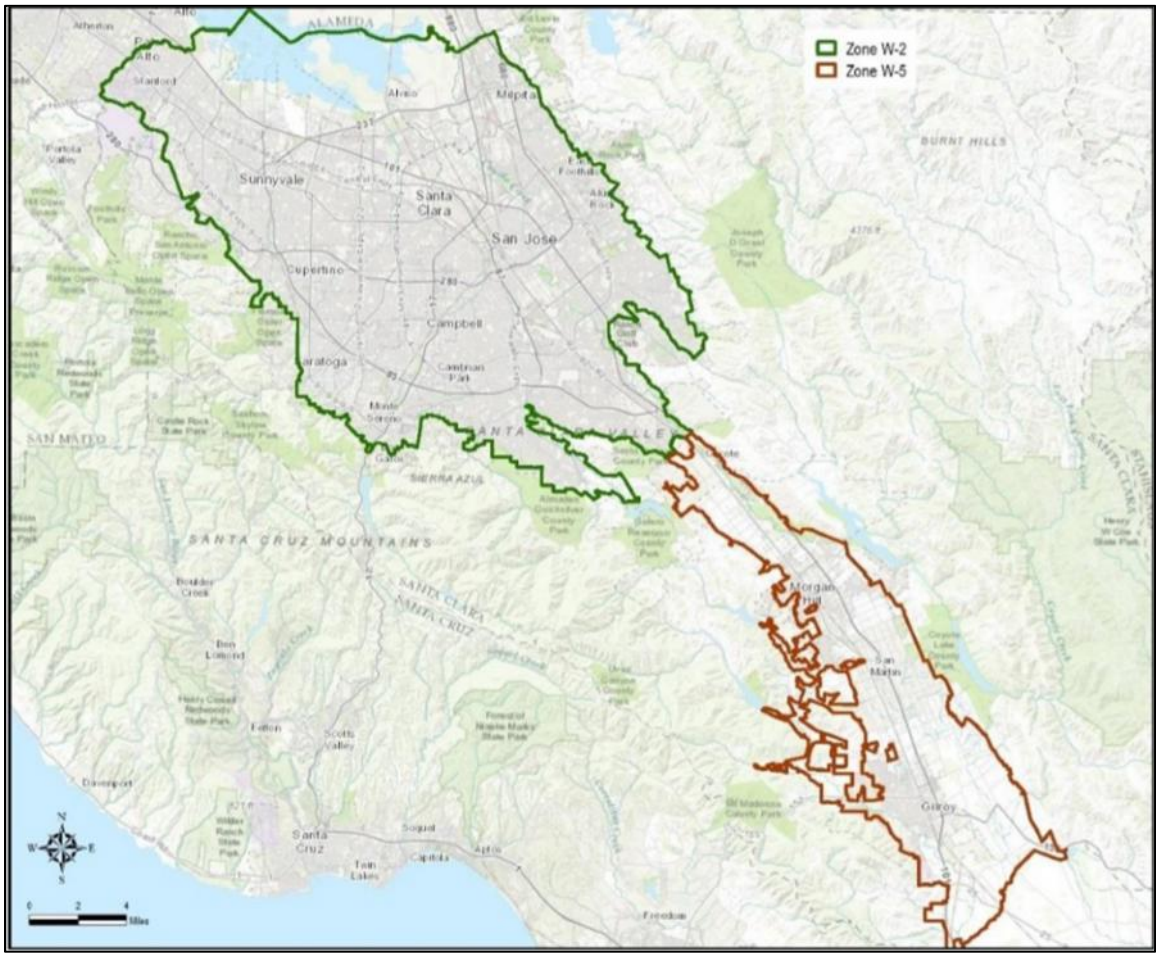
[2] "The board shall have the power, in addition to the powers enumerated elsewhere in this act, to levy and collect a ground water charge for the production of water from the ground water supplies within a zone or zones of the district which will benefit from the recharge of underground water supplies or the distribution of imported water in such zone or zones."

percolation ponds) and "in-lieu recharge" methods through which imported water, local surface water, or recycled water is used in-lieu of groundwater. Water conservation and groundwater protection programs also benefit groundwater supplies by reducing demands on groundwater and protecting water quality.

Valley Water's two current groundwater benefit zones, Zones W-5 and W-2, were formed in 1977 and 1963, respectively (See Figure 1). Zone W-5 is located in the South County and encompasses the Llagas Subbasin and Coyote Valley. The South Zone is supplied water mainly through the groundwater basins. Approximately two-thirds of the groundwater usage is artificially recharged each year by Valley Water by using CVP water imported via the San Felipe Division or locally captured rainwater diverted by Valley Water to various recharge facilities.

Zone W-2 is located in the North County and encompasses the Santa Clara Plain. The California Department of Water Resources delineates the Santa Clara Plain and Coyote Valley regions as the Santa Clara Subbasin. Valley Water's three water treatment plants are located in the North Zone. Local rainfall and imported water (SWP and CVP) are released to replenish the Santa Clara Subbasin or sent to one of Valley Water's three treatment plants for in-lieu recharge.

**Figure 1: Existing Valley Water Groundwater Benefit Zones**



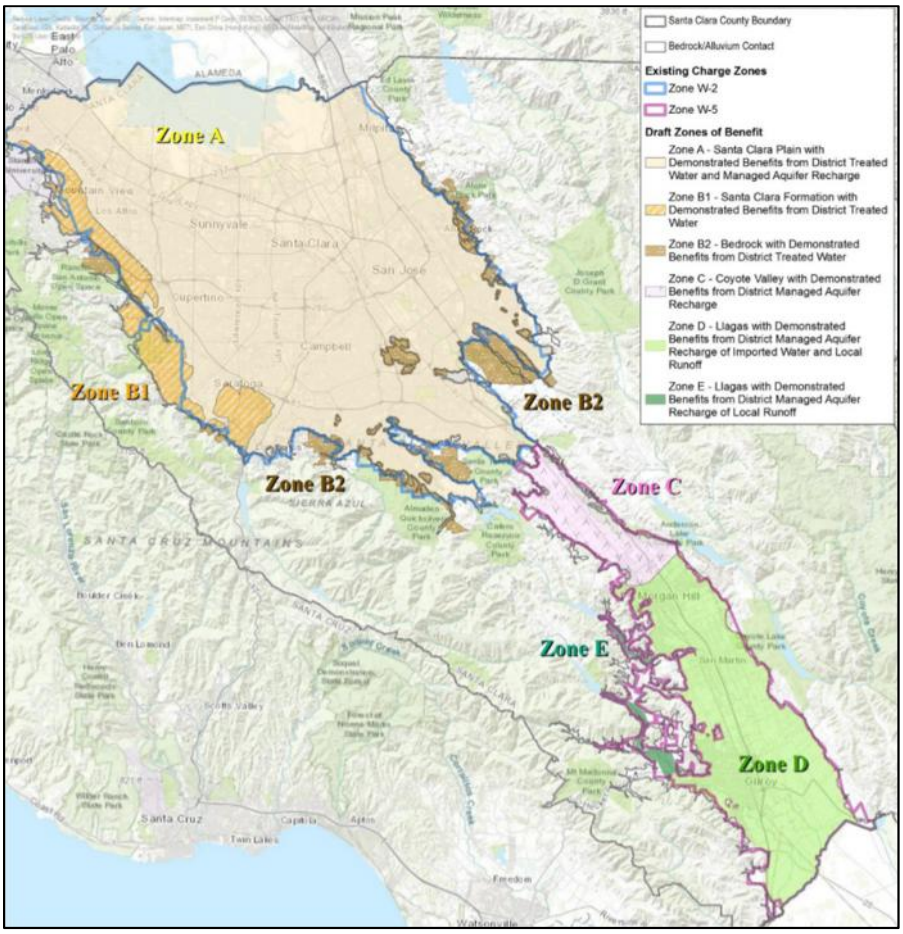
# Proposed Groundwater Benefit Zones

**Proposed Zones**

Montgomery and Associates conducted a groundwater benefit zone analysis to determine whether the zones in place still offer an accurate delineation of hydrologically connected regions and similar benefits, or whether revisions to the zones were warranted. The August 2019 analysis completed by Montgomery & Associates proposed splitting both the North Zone (Zone W-2) and South Zone (Zone W-5) into three separate zones for a total of six distinct zones as described below (See Figure 2). While all zones were found to benefit from Valley Water conservation and groundwater protection activities, these zones were delineated based on the specific benefits received from Valley Water activities as summarized below:

- **Zone A (W-2)**: Benefits from managed aquifer recharge, treated water deliveries, and recycled water programs in the Santa Clara Plain
- **Zone B1:** Benefits from treated water deliveries in the Santa Clara formation
- **Zone B2:** Benefits from treated water deliveries in bedrock
- **Zone C (W-7):** Benefits from managed aquifer recharge (both local runoff and imported water from the CVP/Anderson system) in Coyote Valley.
- **Zone D (W-5):** Benefits from managed aquifer recharge (local runoff and imported water from the CVP/Anderson system) and recycled water programs in the Llagas Subbasin
- **Zone E (W-8):** Benefits from managed aquifer recharge of local runoff in Uvas/Llagas Creek Bottoms

**Figure 2: April 2019 Proposed Groundwater Benefit Zones**



As a result of stakeholder input on the preliminary recommendations from Montgomery's initial hydrological study, staff further analyzed Montgomery-proposed North County Zones B1 and B2, including additional information provided by well users. These proposed zones overlie complex geology and there is limited data available to analyze benefits conferred from Valley Water activities. While some areas in these proposed zones may benefit from Valley Water activities, additional data would be needed to differentiate areas that benefit from those that do not benefit and fully justify adoption of groundwater charges. Therefore, Valley Water staff recommended that Montgomery-proposed Zones B1 and B2 not be implemented at this time. The Board authorized staff to prepare the survey description of four new or modified zones for Board consideration: Modified Zone W-2 in North County (Montgomery Zone A), and Modified Zone W-5, Zone W-7, and W-8 in South County (Montgomery Zones D, C, and E, respectively). The Valley Water staff recommended zones are shown in Figures 3 and 4.

**Figure 3: Zone W-2 with Proposed Modifications**

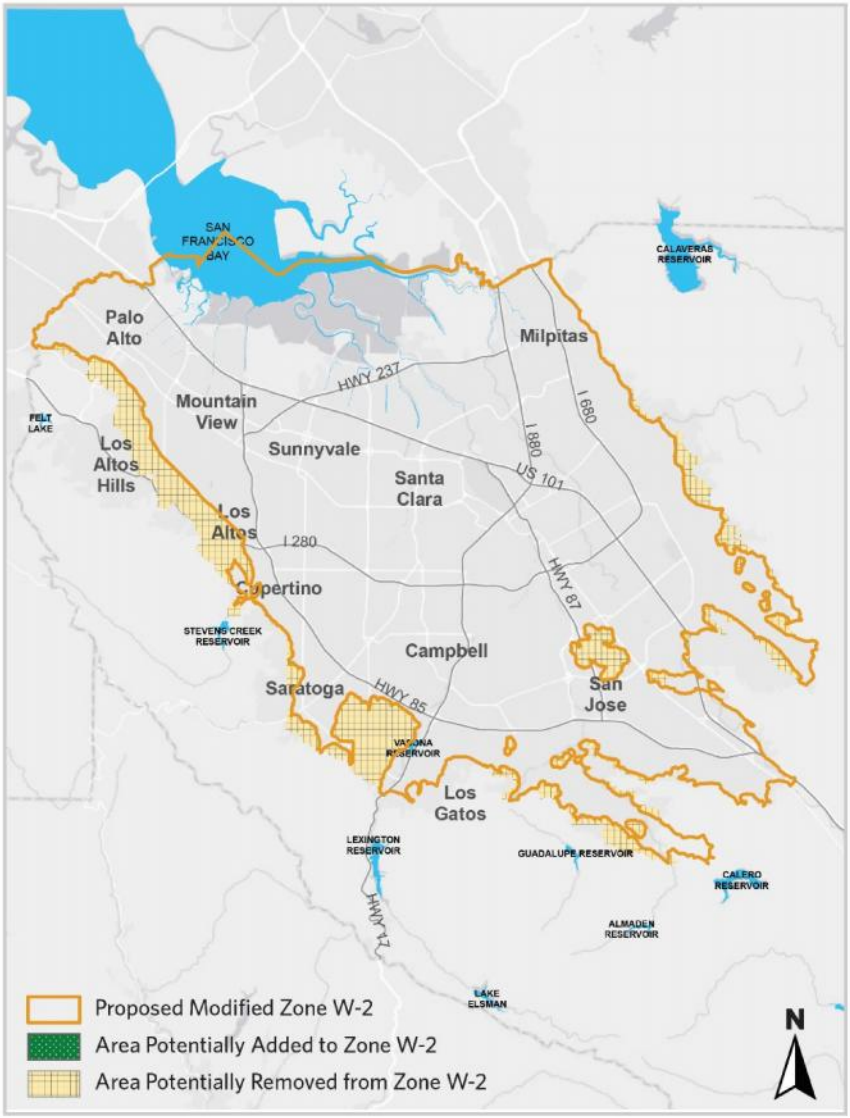
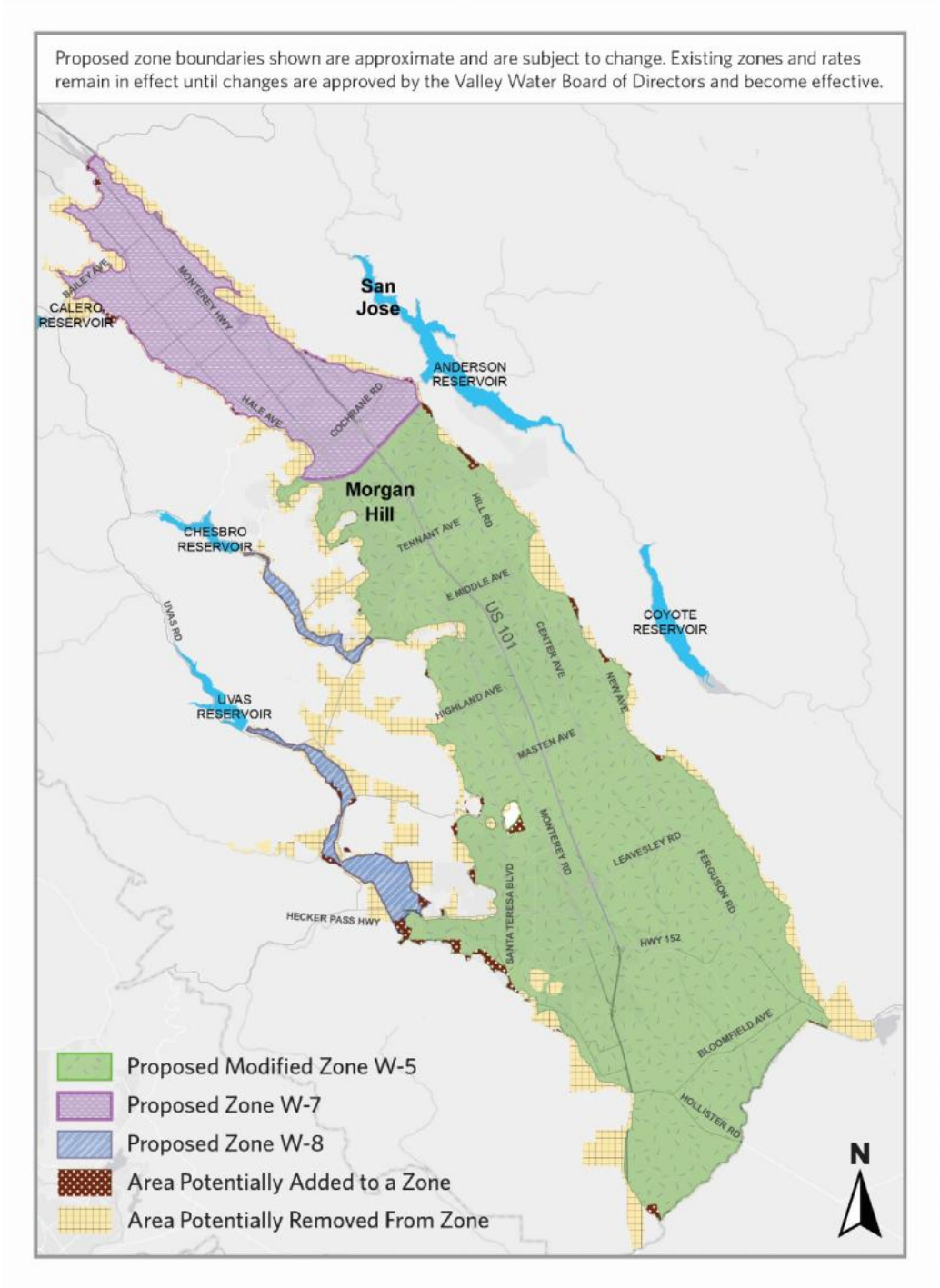


**Figure 4: Zone W-5 with Proposed Modifications**




**Hydrological Flow of Water Between Zones**

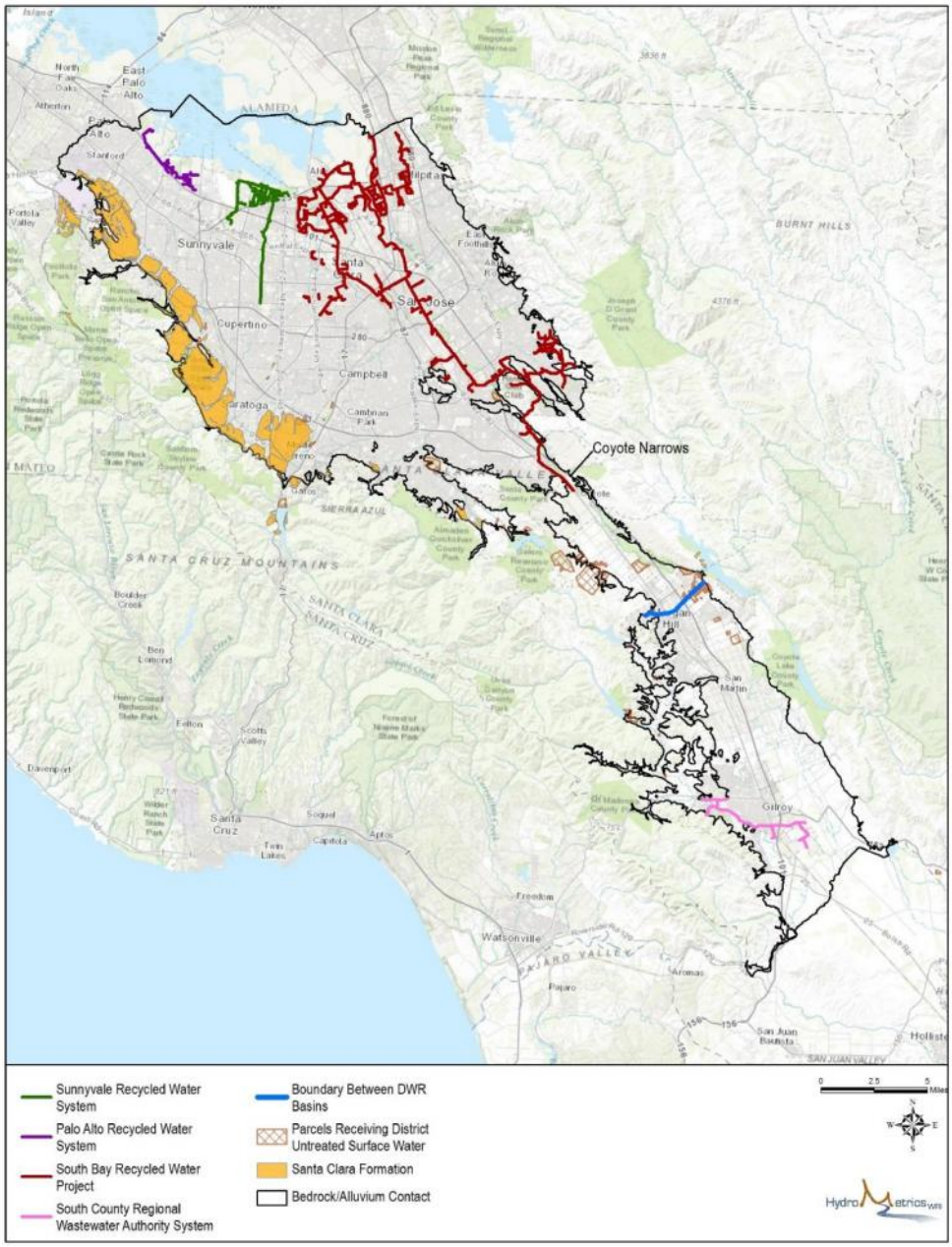
The Montgomery & Associates report identified the hydrological flow of water between zones that merits consideration for allocating costs (See Figure 5). Page 53 of the report states the following:

> "Figure 21 shows that the managed recharge system creeks generally flow out of the bedrock areas into the alluvium. The West Side system flows over the Santa Clara Formation before flowing into the larger Unconsolidated Alluvium area. The Coyote

system flows enters Unconsolidated Alluvium in Coyote Valley and flows north through Coyote Narrows into the Santa Clara Plain. The Lower Llagas system flows through the Unconsolidated Alluvium west of the bedrock outcrops into the Unconsolidated Alluvium in the Llagas Subbasin valley floor. All recharge ponds are located in the Unconsolidated Alluvium in the valley floor."

Groundwater flows through the subsurface from Zone W-7 to Zone W-2 and from Zone W-8 to Zone W-5. The source of the groundwater is a combination of natural recharge and Valley Water's managed recharge activities. Because of this subsurface flow between zones, some benefits from Valley Water's managed recharge activities physically located in Zones W-7 and W-8 are being realized in Zones W-2 and W-5, respectively.

**Figure 5: Aquifer Recharge Systems Managed by District**



# Review of Cost Allocation for FY 2021 Rate-Setting Process

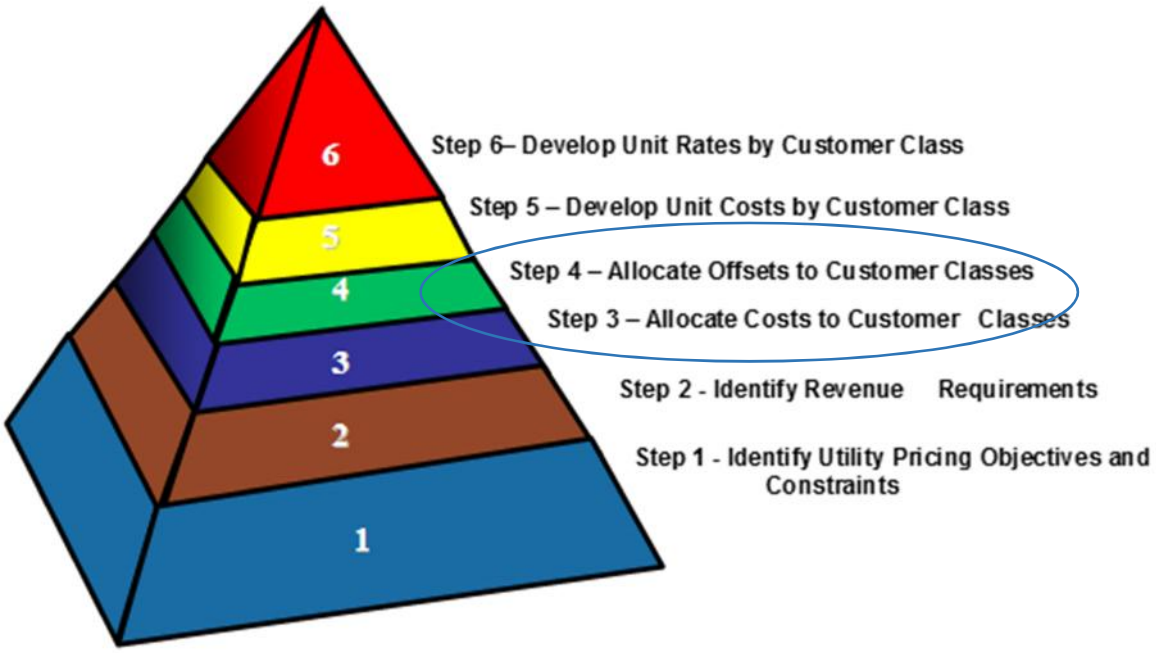
**Overview of Rate-Setting Process**

A detailed explanation of the Valley Water's rate-setting process for groundwater production charges is documented in a 2010 report prepared by Raftelis, titled "Review of the Santa Clara Valley Water District's Cost of Service and Rate Setting Methodology for FY 2011 Groundwater Production Charges" (2010 Report). This report documented the six-step process used by Valley Water to set annual groundwater production charges based on cost-of-service principles and industry best practices. This six-step process for setting rates is shown in Figure 6 and is the same methodology used by Valley Water to determine the FY 2021 groundwater production charges for the proposed four zones.

Valley Water has developed a cost-of-service model that utilizes this six-step process to calculate groundwater productions charges per zone and per customer class, which is documented in Valley Water's annual *Protection and Augmentation of Water Supplies* report (PAWS report). Raftelis utilized the previously developed rate and financial planning model used annually by Valley Water staff to determine groundwater production charges and expanded the capability of the model to accommodate the three new South Zones. Specifically, this included the ability to allocate operations and maintenance costs, capital costs, and non-rate revenue offsets for each of the three proposed South Zones.

The rate-setting-process is consistent with the development of groundwater production charges in the past. The focus of this report is Step 3 – Allocate Costs to Customer Classes and Step 4 – Allocate Offsets to Customer Classes since these steps involve the allocation of costs (operations and maintenance costs and capital costs) and non-user rate revenues, respectively, among zones.

**Figure 6: District's Six-Step Process to Rate Setting**



**Process to Review and Validate Cost Allocations and Offsets**

The allocation of costs to each groundwater benefit zone is accomplished via one of several sub-steps that are part of Step 3 – Allocate Costs to Customer Classes and Step 4 – Allocation of Offsets to Customer Classes as shown in Figure 6. Once revenue requirements (which include operations and maintenance costs, capital costs, and offsetting non-rate revenue to derive net revenue requirements) have been identified for the upcoming fiscal year, the revenue requirements are allocated first to functions, next to zones, and finally to customer classes. The allocation methodologies to functions and to customer class remain unchanged. However, the allocation methodology to allocate costs to zones required review and modifications to reflect the proposed four groundwater benefit zones.

Historically, the allocation to zones is reviewed and established annually as part of Valley Water's rate-setting process, which is also documented in the PAWS report. During this annual review, the project manager responsible for each project calculates an allocation between the North and South Zone based on historical information most relevant to each unique project/activity. For the FY 2021 rate-setting process, the project managers had to review each allocation and make modifications based on the proposed zones. The allocation factors developed by project managers were the focus of the review and validation of the cost-of-service allocations. Project managers developed allocation factors for the proposed four zones for operating and maintenance activities, capital improvement projects, and offsetting non-rate revenues. The annual process, as well as the process to accommodate the proposed four zones, is described below.

1. Operations and Maintenance Costs – Historically, for each operations and maintenance cost activity, the project manager first identifies the most relevant data to use as the basis for the allocation, such as raw water deliveries, imported water, labor charged to activities performed within a zone, number of wells within a zone, etc. This information is gathered by zone, when available, to determine an allocation factor. Then, the project manager determines if the allocation sufficiently reflects the benefit received by each zone, or if subsequent data is required to estimate the benefit. Data used to develop a subsequent allocation factor can include water use, population estimates, etc., and as explained later, the subsurface flow of water.

   For the FY 2021 rate-setting process, the project managers independently reviewed the methodology used historically to allocate operations and maintenance activities among the North and South Zones. For each operations and maintenance activity, the project managers had to review and recalculate the allocation factors for each activity between the North and South Zone based on recent information and had to establish allocation factors among the three South Zones.

2. Capital Projects – Historically, on an annual basis, Valley Water prepares a capital cost projection for a 10-year period which includes project costs as well as funding sources for these projects such as the issuance of debt, pay-go or rate-funded projects, grants, and the use of reserves. It should be noted that capital and debt service costs are not allocated directly to the South Zone. The North Zone funds all capital costs. Once the project is completed, the South Zone will re-pay the North Zone for their portion of capital costs based on an amortization schedule that mimics the terms of the bond issued for the project.

   For completed capital projects, the project manager for each project determines an allocation factor between the North and South Zones for the amortized amount based on the benefit the project provided to each zone. Because the allocation factors between the North and South Zone are determined at the

time of project completion, when most information is known about the project and its benefits, the allocation factors between the North and the South are memorialized. Therefore, for the FY 2021 rate-setting process, the project managers did not modify the allocation factors between the North and South Zones for completed projects. However, they did determine allocation factors among the three South Zones for each project.

For projects that will be completed in the future, project managers establish an allocation factor between the North and the South Zone. Because these projects are not completed, the allocations represent estimates of the benefit of each project. For the FY 2021 rate-setting process, the project managers reviewed the previously determined allocation factors between the North and South Zones, revised them if necessary, and developed allocation factors among the three South Zones.

3. Offsetting Non-Rate Revenues – Valley Water generates several non-user related revenues. These revenues can be used to reduce, or offset, the gross revenue requirements. Historically, these non-rate revenues are reviewed annually to determine the cost allocation between the South and North Zone. For the FY 2021 rate-setting process, the project managers reviewed the previously determined allocation factors between the North and South Zones, revised them if necessary, and developed allocation factors among the three South Zones.

Once the project managers calculated the allocation factors for the proposed four zones, the project team (which consisted of Raftelis staff and Valley Water staff) held a series of conference calls to review the data and the reasonableness of the allocation factors for each activity based on a set of criteria. The criteria align with several of Valley Water's pricing objectives, as listed and explained in the 2010 Report. Specifically, the criteria to ensure cost allocations align with the pricing objectives of *legal consideration* and *cost-of-service based* rates.

*Valley Water's Pricing Objectives*

**Legal Considerations** – As mentioned in the PAWS report, "Both the Groundwater and the Surface Water rate setting process are consistent with Proposition 26 requirements that the groundwater production and surface water charges are no more than necessary to cover reasonable costs, and bear a fair or reasonable relationship to the rate payor's burdens on or benefits received from the groundwater and surface water programs." The criteria below were established to align the rate-setting process with the legal considerations of Prop 218 and Prop 26.

- **Basis of allocation** – The data used to calculate the allocation factors should be relevant to the activity performed and supports a reasonable recognition of the benefit or burden received in each zone. In addition, the data used should be based on accessible information that can be obtained or estimated annually to facilitate the cost allocation and rate-setting process.
- **Consistency with hydrology and benefits/burdens received** – The allocation factors should be consistent with the augmentation of groundwater within each zone (including consideration of subsurface flows) and bear a reasonable relationship to the benefits or burdens provided to each zone. The allocation factors should reasonably recognize the benefit/burden of aquifer recharge by source (local runoff or imported water) and method (e.g., in-lieu recharge via treated water or recycled water deliveries).
- **Consistency** – Similar activities should be allocated using similar methodologies and data, if appropriate. Similar activities (whether they are operational, capital or revenue generated) should

be allocated consistently to ensure the allocation of costs for similar activities matches the corresponding offsetting non-rate revenues.

**Cost of Service-Based Rates** – Cost of service-based rates are established by industry guidelines as well as best practices. Industry best practices involve establishing cost allocation factors using multiple years of data such that data is normalized. The criteria established below was used to align the rate-setting process to industry standards.

- **Timeframe of data used** – Historical data should be used to limit the variability in cost allocation factors from year to year and therefore minimize rate impacts from year to year. The allocation should be based on at least five or 10-year rolling averages, when available, to normalize cost allocations.

The project team reviewed each line item based on the criteria provided above and discussed any inconsistencies, considerations for modification to the data used for the allocation, and considerations for modifying the allocation methodology to better meet the criteria and ensure alignment with Valley Water's pricing objectives. Valley Water staff followed up with each project manager to discuss recommended changes and/or considerations. Based on each project manager's knowledge of each activity and the benefit received, project managers refined the allocation or provided support to maintain the existing cost allocations. The resulting allocation for each Valley Water activity is documented in the PAWS report in Appendix B and C but a summary of key results is discussed in the following section.

# Summary of Results for FY 2021 Cost Allocation

**Resulting Changes to Key Ratios**

The process used to review and validate each activity resulted in changes to several key ratios used to allocate costs between the South and North Zones, as well as the development of allocation factors between the three proposed South Zones. Table 1 compares the changes to these key allocation ratios from the prior year between the South and North Zone and shows the allocation ratios developed among the three proposed South Zones for FY 2021. A description of the general application of the allocation ratios is provided below. The application of these key allocation ratios represents approximately 64% of the total allocated operations and maintenance costs, 54% of the capital costs, and 89% of the non-rate revenues *of the South Zone* for FY 2021. Following Table 1 is an explanation of key factors that impacted the development of these key allocation ratios.

- **Total water use** – This allocation typically applies to administration and general activities and infrastructure that support the overall operations of the Water Utility Enterprise Fund such as general planning, management, training, technology used for managerial purposes, etc.
- **Raw water deliveries ratio** – This allocation typically applies to activities and infrastructure that support the supply, distribution, and general/administrative activities associated with all collective raw water efforts, such as water rights, environmental compliance, SCADA systems, engineering, etc.
- **CVP imported water ratio** – This allocation typically applies to activities and infrastructure involved in obtaining CVP water, such as the San Felipe Division, the Pacheco pumping plant, the Pacheco Conduit, etc. and includes the purchase of CVP deliveries.

- **Imported water ratio** – This allocation typically applies to operations and maintenance activities associated with water banking initiatives and general imported water activity management.
- **Groundwater recharge ratio** – This allocation typically applies to raw water transmission and distribution activities associated with recharging aquifers, such as the operations and maintenance of recharge ponds.

**Table 1: Comparison of Key Cost Allocations Across Proposed Four Zones**

| Allocation Basis | Key Factor Impacting Allocation | W-5 | W-7 | W-8 | Subtotal South County Allocation for 2021 | Prior Year South County Allocation | 2021 W-2 Allocation |
|---|---|---|---|---|---|---|---|
| **Total water use (M&I and AG*)** | Number of Wells and Inclusion of AG use | 17.3% | 5.0% | 0.4% | 22.7% | 13.6% | 77.3% |
| **Raw water deliveries ratio** | Water Deliveries and Hydrology | 10.5% | 5.5% | 0.1% | 16.1% | 17.9% | 83.9% |
| **CVP imported water ratio** | Water Deliveries and Hydrology | 8.0% | 9.7% | 0.0% | 17.7% | 20.8% | 83.3% |
| **Imported water ratio** | Water Deliveries and Hydrology | 4.8% | 5.8% | 0.0% | 10.6% | 12.7% | 89.4% |
| **Groundwater recharge ratio** | Water Deliveries and Hydrology | 24.3% | 12.3% | 0.1% | 36.7% | 36.4% | 63.3% |

*M&I refers to municipal and industrial water use and AG refers to agriculture water use.

**Key Factors Impacting Cost Allocations**

The process used to review and validate each activity resulted in several key factors impacting the allocation of costs between the South and North Zone, as well as within the three proposed South Zones. The key factors resulted from the proposed groundwater benefit zones which impacted water use among zones, subsurface flow of water between zones, as well as systems (infrastructure) used within zones to obtain water supplies.

1. **Number of Wells**

Based on the proposed four zones, Valley Water determined the current number of wells and estimated pumping, and the impact of the number of wells and pumping (See Table 2). The removed wells are those wells where benefits from Valley Water activities could not be demonstrated. Based on the proposed zones, the overall number of wells decreases by approximately 16%. The decrease is more prominent in the North Zone which causes the proportion of wells to increase in the South Zone. However, the overall pumping associated with the removed wells in the proposed zones is minimal, representing a change in the volume of pumped water of only 0.8%. The changes in the proportion of wells impacts the allocation of activities associated with well maintenance, monitoring, permitting, etc. The changes in the proportion of pumped

water minimally impacts allocations based on water use, but this data will be relevant in future years as this data is monitored and incorporated in the 10-year rolling average.

**Table 2: Well and Pumping Data for Proposed Four Zones**

| Zone | Current No. of Wells[1] | % of Total Current Wells | Removed Wells | Total Revised Wells | % of Total Revised Wells | Difference in % of Wells |
|---|---|---|---|---|---|---|
| **W-2** | 700 | 18% | 281 | 419 | 13% | -5% |
| | | | | | | |
| **W-5** | 2,597 | 66% | 358 | 2,239 | 68% | 2% |
| **W-7** | 427 | 11% | | 427 | 13% | 2% |
| **W-8** | 229 | 6% | | 229 | 7% | 1% |
| **Subtotal South** | 3,253 | 82% | 358 | 2,895 | 87% | 5% |
| **Total** | **3,953** | 100% | 639 | 3,314 | 100% | 0% |
| **Overall Change in Number of Wells** | | | | | | **-16.2%** |

| Zone | FY 18 Pumping (AF) | % of Total Pumping | Removed Pumping (AF) | Total Revised Pumping (AF) | % of Total Revised Pumping | Difference in % of Pumping |
|---|---|---|---|---|---|---|
| **W-2** | 69,416 | 56% | 528 | 68,888 | 56% | 0.0% |
| | | | | | | |
| **W-5** | 41,521 | 33% | 502 | 41,019 | 33% | -0.1% |
| **W-7** | 12,328 | 10% | | 12,328 | 10% | 0.1% |
| **W-8** | 788 | 1% | | 788 | 1% | 0.0% |
| **Subtotal South** | 54,637 | 44% | 502 | 54,135 | 44% | 0.0% |
| **Total** | **124,053** | 100% | 1,030 | **123,023** | 100% | |
| **Overall Change in Pumping** | | | | | | **-0.8%** |

1. Number of wells based on wells pumping in FY18

### 2. Water Use

Historically, several activities typically related to general activities were allocated based on the 10-year rolling average of water sales (use) to each zone *exclusive* of agriculture use (or M&I use only). The allocation was based on water use since this was a reasonable proxy for the benefit of these general activities (See Table 3). However, water use was only based on M&I use to promote the District Act and Resolution 99-21 regarding AG water production charges. The allocation factor was modified to reflect *all* water use (including AG use) since the general activities provide benefit to all water users, not just M&I users. The allocation factor using total water use is still based on a 10-year average but as shown in Table 1, the inclusion of AG water use results in an increase in the overall water use allocation to the South Zone in FY 2021 from approximately 13.6% to 22.7%.

**Table 3: Historical Water Usage for Proposed Four Zones**

| | FY 09 | FY 10 | FY 11 | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 | FY 17 | FY 18 | 10-year Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Modified W-5 Water Usage (KAF)** | 45.86 | 39.81 | 40.54 | 41.91 | 46.87 | 46.68 | 42.49 | 39.42 | 39.83 | 42.89 | |
| **Zone W-7 Water Usage (KAF)** | 15.27 | 13.65 | 12.67 | 12.55 | 12.65 | 11.91 | 10.42 | 10.03 | 12.65 | 13.04 | |
| **Zone W-8 Water Usage (KAF)** | 1.03 | 0.99 | 0.94 | 0.93 | 1.08 | 0.89 | 0.86 | 0.8 | 0.82 | 0.79 | |
| **Subtotal: Modified South County deliveries (KAF)** | 62.16 | 54.45 | 54.15 | 55.39 | 60.60 | 59.48 | 53.77 | 50.25 | 53.30 | 56.72 | |
| | | | | | | | | | | | |
| **Modified W-2 Water Usage (KAF)** | 221.30 | 193.93 | 195.47 | 209.10 | 215.45 | 223.35 | 183.06 | 148.87 | 161.34 | 173.87 | |
| **Total deliveries (KAF)** | 283.46 | 248.38 | 249.62 | 264.49 | 276.05 | 282.83 | 236.83 | 199.12 | 214.64 | 230.59 | |
| | | | | | | | | | | | |
| **Modified W-5 Water Usage (KAF)** | 16.2% | 16.0% | 16.2% | 15.8% | 17.0% | 16.5% | 17.9% | 19.8% | 18.6% | 18.6% | 17.3% |
| **Zone W-7 Water Usage (KAF)** | 5.4% | 5.5% | 5.1% | 4.7% | 4.6% | 4.2% | 4.4% | 5.0% | 5.9% | 5.7% | 5.0% |
| **Zone W-8 Water Usage (KAF)** | 0.4% | 0.4% | 0.4% | 0.4% | 0.4% | 0.3% | 0.4% | 0.4% | 0.4% | 0.3% | 0.4% |
| **% South County** | 21.9% | 21.9% | 21.7% | 20.9% | 22.0% | 21.0% | 22.7% | 25.2% | 24.8% | 24.6% | **22.7%** |

## 3. Water Deliveries

Cost allocations for Valley Water activities such as groundwater recharge, treated water deliveries, recycled water deliveries, and imported water are primarily driven by water deliveries or physical location of the activity. There is certain infrastructure and activities related to water deliveries that only provide benefits to one or more South Zones, as described below. These benefits are incorporated in several cost allocation factors for the South Zone.

- All 3 South Zones benefit from managed aquifer recharge from local runoff but only Zones W-5 and W-7 benefit from imported water deliveries from the CVP/Anderson system. Therefore, the activities and infrastructure associated with the delivery of water from this system are incorporated in the allocation factors for Zones W-5 and W-7 only.
- Zones W-5 and W-8 benefit from managed aquifer recharge from local runoff provided by the Chesbro/Uvas systems. Therefore, the activities and infrastructure associated with the deliveries of water from this system are incorporated in the allocation factors for Zones W-5 and W-8 only.
- Recycled activities and infrastructure in the South Zone provide water supply and benefit only to Zone W-5. As such, Zones W-7 and W-8 do not benefit from any recycled infrastructure or activities.

## 4. Hydrology

While cost allocations for Valley Water activities (such as groundwater recharge and imported water) are primarily driven by water deliveries or physical location of the activity, a secondary consideration for cost allocation is hydrology. In particular, the subsurface outflows in Zones W-7 and W-8 result in some benefit to Zones W-2 and W-5, respectively. Valley Water staff incorporated the estimated subsurface outflow attributed to Valley Water activities into the calculations of several cost allocation factors including the raw water delivery ratio, the CVP imported water ratio, the imported water ratio, and the groundwater recharge

ratio. The incorporation of subsurface flow into these cost allocation calculations results in a reduction in the overall cost allocation to the South County (with the exception of the groundwater recharge allocation).

It should be noted that only the groundwater recharge ratio results in a slight increase in cost allocation to the South County due to a modification in the timeframe of historical data used to determine this cost allocation. To be consistent with the timeframe of data used for other similar cost allocations, the timeframe of data used was increased from five years to 10 years.

**Key Results of Cost Allocation**

The adjusted revenue requirements for FY 2021 (prior to any adjustment for agricultural preservation or conjunctive use benefits) allocated to the South Zone (combined) are lower compared to those allocated in the prior year. Specifically, the adjusted revenue requirements for FY 2021 for the South Zone represent 8.2% of the total adjusted revenue requirements compared to 9.1% in the prior year. It should be noted the South Zone is projected to account for approximately 25% of total water use in FY 2021. The adjusted revenue requirements allocated to Zones W-5, W-7, and W-8 are 5.8%, 2.3%, and 0.1%, respectively, compared to projected water use of 18.9%, 5.5%, and 0.4%, respectively.

The adjusted revenue requirements for FY 2021 allocated to the North Zone are higher compared to those allocated in the prior year. Specifically, the North Zone adjusted revenue requirements in FY 2021 represent 91.8% of the total adjusted revenue requirements compared to 90.9% in the prior year. It should be noted the North Zone is projected to account for 75% of total water use in FY 2021.

# Conclusion

Because Valley Water's rate-setting process for FY 2021 for the proposed four zones follows the six-step process historically used to set rates, Raftelis focused on the cost allocation among the proposed four zones. Raftelis relied upon the expertise of Valley Water staff to develop the cost allocations and Raftelis reviewed the cost allocations for reasonableness and alignment with Valley Water pricing objectives. Raftelis finds the cost allocation among the proposed four zones to be reasonable due to the following:

- **Basis of allocation** – The allocation factors are relevant to the activity performed and support a reasonable recognition of the benefit or burden received in each zone.
- **Consistency with hydrology and benefits/burdens received** – The allocation factors are consistent with the augmentation of groundwater within each zone (including consideration of subsurface flows) and bear a reasonable relationship to the benefits or burdens provided to each zone. The allocation factors also reasonably recognize the benefit/burden of aquifer recharge by source and method.
- **Consistency** – The allocation factors are consistent for similar activities and similar methodologies are used in determining cost allocations for similar types of activities.
- **Timeframe of data used** – The cost allocations are based on rolling averages of at least five years of historic data, when available, to limit variability in cost allocation factors from year to year.